

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Previously Presented) A fluid flow system to adjust a humidity of a gas supplied in a fuel cell system, comprising:

a fuel cell stack having a cathode inlet and a cathode exhaust;

a compressor that draws in a mixture of fresh gas and humidified exhaust gas from said cathode exhaust and compresses said mixture therein;

a metering device to adjust a flow of said cathode exhaust gas to said compressor, said metering device adapted to regulate said cathode exhaust gas independently from said fresh gas;

an injector injecting water into said mixture within said compressor, said compressor supplying said mixture to said cathode inlet; and

a controller that controls said metering device, said injector and said compressor to adjust the humidity.

2. (Cancelled)

3. (Original) The fluid flow system of claim 1 wherein a rate of cathode exhaust gas flow is controlled to adjust the humidity.

4. (Original) The fluid flow system of claim 1 wherein an amount of water injected into said compressor is controlled to adjust the humidity.

5. (Original) The fluid flow system of claim 1 wherein a compression pressure of said compressor is adjusted based on an amount of water injected into said compressor.

6. (Original) The fluid flow system of claim 5 wherein said compression pressure is adjusted to vaporize said water during compression.

7. (Cancelled)

8. (Previously Presented) A method of regulating a humidity of a cathode supply gas to a cathode side of a fuel cell stack, comprising:

mixing the cathode supply gas with a controlled quantity of feedback gas from said cathode side to effect a relative humidity of the cathode supply gas, said controlled quantity of cathode feedback gas adjusted independently from said cathode supply gas based on a desired relative humidity of said cathode supply gas;

injecting water into the cathode supply gas to further effect said relative humidity of the cathode supply gas; and

compressing the cathode supply gas in a compressor.

9. (Original) The method of claim 8 wherein the cathode supply gas is air.

10. (Original) The method of claim 8 further comprising vaporizing said water within said compressor.

11. (Original) The method of claim 10 wherein said vaporizing is achieved using heat generated through compression.

12. (Original) The method of claim 10 further comprising adjusting a compression pressure of said compressor based on a quantity of said water to vaporize said water therein.

13. (Cancelled)

14. (Previously Presented) A method of regulating a relative humidity of a gas supplied to a cathode side of a fuel cell stack, comprising:

controlling a flow of feedback gas from said cathode side to a compressor to adjust said relative humidity of the gas, said flow of feedback gas controlled independently from said cathode supply gas;

injecting water into said compressor, controlling the water injection to adjust said relative humidity;

vaporizing water in said compressor to further adjust said relative humidity of the gas; and

discharging the gas at a pressure sufficient for use in the fuel cell stack.

15. (Cancelled)

16. (Original) The method of claim 14 wherein said vaporizing is achieved using heat generated through compression.

17. (Original) The method of claim 16 further comprising adjusting a compression pressure of said compressor based on a quantity of said water to vaporize said water therein.

18. (Original) The method of claim 14 wherein said feedback gas is saturated.

19. (Original) The method of claim 14 wherein said feedback gas is supersaturated.

20. (Previously Presented) A method of regulating a relative humidity of a gas, comprising:

controlling a flow of feedback gas to a compressor to adjust said relative humidity of said gas, said flow of feedback gas being controlled independently from other gases;

injecting water into said compressor, controlling the water injection to adjust said relative humidity; and

vaporizing water injected into said compressor to further adjust said relative humidity of said gas.

21. (Original) The method of claim 20 wherein said feedback gas is saturated.

22. (Original) The method of claim 20 wherein said feedback gas is supersaturated.